Oct. 28, 1924. 1,512,902

G. M. BOYD

PORTABLE PROPELLER

Filed Feb. 26, 1924

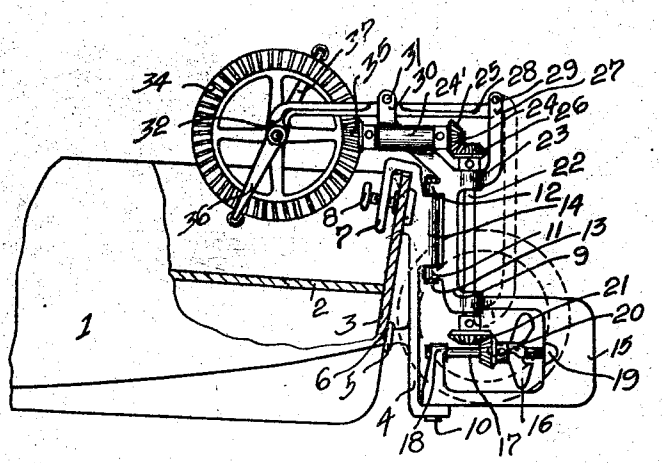


Fig. 1

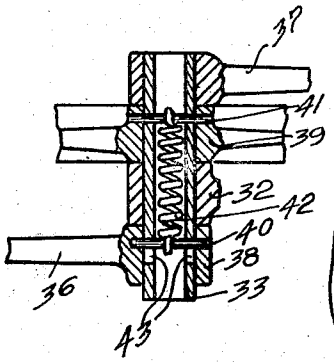


Fig. 3

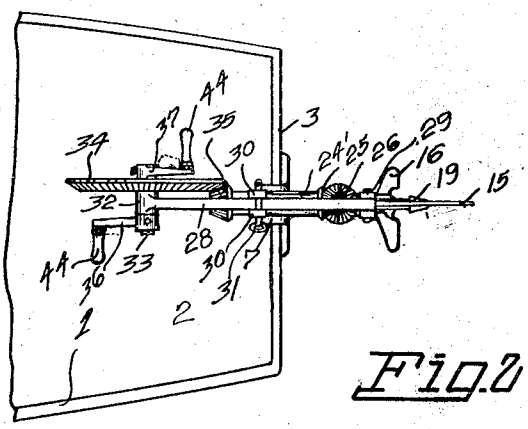


Fig. 2

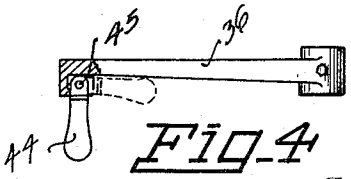


Fig. 4

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UNITED STATES PATENT OFFICE.

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PORTABLE PROPELLER.

Application filed February 26, 1924. Serial No. 695,140.

To all whom it may concern:

Be it known that I, GRANVILLE M. BOYD, a citizen of the United States, residing at Spokane, in Spokane County, and State of Washington, have invented certain new and useful Improvements in Portable Propellers, of which the following is a specification.

My present invention relates to improvements in portable propellers of the screw, steering and manually operated type applicable for use on small boats as usually employed by fishermen, hunters and others where facility and convenience are required in manipulating the boat. The primary object of the invention is the provision of a portable device of this character which may readily be attached at the stern of a small boat for use as a steering propeller, and which may with equal facility be detached therefrom and its parts folded to compact form to provide a structure capable of being transported with ease and stored in small space, when desired.

With the above objects in view the invention consists in certain novel combinations and arrangements of parts as will hereinafter be more fully specified and claimed.

In the accompanying drawings I have illustrated one complete example of the physical embodiment of my invention wherein the parts are combined and arranged in accordance with the best mode I have thus far devised for the practical application of the principles of my invention.

Figure 1 is a view in side elevation of the portable steering propeller as an attachment for a boat a portion of which is shown to illustrate the relation of parts.

Figure 2 is a top plan view of the structures shown in Figure 1. Figure 3 is a detail sectional view illustrating the means for disengaging gears to permit folding of parts, and Figure 4 is a detail view showing the relation of a foldable handle to its crank arm.

In order that the general assembly and relation of parts may readily be understood I have indicated a portion of a small boat 1, with a usual deck 2 and stern portion 3, the boat being of that type usually employed by hunters or fishermen and others engaged in aquatic sports or vocations.

In carrying out my invention I utilize a bracket or frame member 4 of proper size for use at the stern of the boat and fashioned with a bracing boss 5 which may have a point or spur 6 that frictionally engages and embeds itself in the face of the stern port of stern of the boat. The bracket is suspended from the stern of the boat by an overhanging flange or hook 7 which is provided with a clamp bolt 8 which may be turned to draw the bracket tight against the rear of the boat stern to form a rigid supporting member for the operating parts of the attachment, including the propelling and steering means.

At its rear the bracket supports a propeller frame 9 which is pivoted at 10 to the lower portion of the bracket and is also provided with hinged or pivoted members 11 and 12 alined with the lower pivot, through which the hinge bolt 13 passes. The bolt is supported from the bracket in an integral bearing sleeve 14, and it will be apparent that the frame 9 may swing bodily in these alined bearing members.

The rudder 15 is fashioned as an integral portion of the frame and of course swings with it in steering the boat. The screw propeller 16 is carried within the space provided therefor forward of the rudder and is mounted on its shaft 17, the latter being journaled in bearings 18 and 19 of the frame.

The propeller shaft is provided with a bevel gear 20 that meshes with a complementary gear or pinion 21 on the vertical transmission shaft 22, which is arranged parallel with the steering bolt 13 at the rear thereof, and this vertical transmission shaft is journaled to revolve in the spaced bearings 23 of the propeller frame.

In the upper part of the steering and supporting bracket or frame a horizontally disposed transmission shaft 24 is journaled in the bearing sleeve 24′ of the frame, which sleeve projects over the stern of the boat toward the bow, and the horizontal transmission shaft and vertical transmission shaft are connected by the bevel gears 25 and 26 rotatable with these respective shafts.

At the rear upper end of the frame an upright post 27 is fashioned integral with one of the bearing members 23, which is designed to support a foldable arm 28 which normally extends forward from its pivot 29 on the post above the transmission shaft 24 and its bearing sleeve 24′. The foldable arm is held rigid with the bearing sleeve by means of a pair of spaced perforated ears 30

between which the arm is designed to slip, and a locking pin 31 passed through these ears after the arm is located in position, prevents displacement of the arm.

The forward free end of the foldable arm is fashioned with a bearing head 32 through which passes and in which is journaled a hollow, horizontally disposed stud shaft 33 carrying the driving bevel gear 34 for the propeller. This driving gear meshes with a complementary driving pinion 35 on the transmission shaft 24 for conveying power to the propeller, which power is developed through the pairs of crank arms 36 and 37. These crank arms are located at the opposite sides of the driving gear and the bearing head 32 and are adapted for manual application of power in propelling the boat, the power being transmitted through the hollow stud shaft to the driving gear 34 and thence through the transmission mechanism to the screw propeller.

Before the foldable arm 28 can be turned backward to dotted position in Figure 1, it is neecssary that the driving gear 34 and its pinion 35 be disengaged, and for this purpose I provide a novel arrangement in connection with the hollow driving shaft 33, the crank arm 36 and gear 34. In Figure 3 it will be seen that the hub 38 of the crank arm 36 and the hub 39 of the gear 34 are provided with the respective pins 40 and 41. These pins pass transversely through the hubs and the hollow shaft and are located at opposite sides of the bearing head 32, and a spring 42 within the hollow shaft has its respective ends anchored to the spaced pins. To accommodate the pin 40 the hollow shaft is fashioned with parallel complementary slots 43, and by this anchoring means it will be apparent that the spring which is under tension is instrumental in drawing and holding the hub 39 and sleeve or hollow shaft 33 in operative position. The tension of the spring holds the hub 39 against bearing head 32, and holds the shaft in place with the hub of the crank arm 37 against the hub of the driving gear. By grasping the gear wheel and pulling in a direction away from the bearing head 32 it will be apparent that the crank arm 37, gear wheel 34 and hollow shaft 33 will be moved relatively to the bearing head and crank arm 36. The slots 43 permit movement of the hollow shaft with relation to the pin 40 sufficient to disengage the teeth of the driving gear from the teeth of the driving pinion. Then the foldable arm (after pin or bolt 31 has been withdrawn) together with the driving gear and crank arms may be swung upwardly, over to the rear or over the stern of the boat, and down to the dotted position in Figure 1, to form a compact structure that may be stored in small space, and may easily be transported.

To further reduce the space occupied by the dismantled attachment, the handles 44 on the crank arms are hinged thereto at 45 so that they may be folded back to dotted position in Figure 4 alongside the arms and out of the way. When in use the handles of course are projected perpendicular to the arms as in full lines Figures 2 and 4.

It will thus be obvious that the screw propeller may be turned for propulsion of the boat by means of manual power applied to one or both of the crank arms, and that while the arms are grasped and being turned manually the boat may also be steered through the use of these arms by turning the frame and the operating parts supported thereby bodily to swing the rudder or blade 15 in the desired direction. When not desired for use the bolt 8 may be loosened to release the clamp attachment and the portably propelling and steering means may bodily be detached from the stern of the boat, and with the parts folded as described may be transported or stored with facility and convenience.

Having thus fully described my invention what I claim as new and desire to secure by letters patent is—

1. The combination in an attachment as described with a hinged frame and a transmission shaft therein having a pinion thereon, of a foldable arm pivoted on the frame and provided with a transversely arranged bearing head, a shaft in the bearing head having a gear for co-action with said pinion, and means whereby said shaft may be moved in its bearing to release the gear and pinion for folding said arm.

2. The combination with a hinged frame having a bearing sleeve and perforated locking lugs thereon, of a foldable arm pivoted in the frame and adapted to seat between said lugs and a locking pin for said lugs, a transmission shaft journaled in the sleeve and a pinion thereon, a bearing head at the free end of said arm and a relatively movable shaft in said sleeve, and a gear to engage said pinion and movable with said shaft.

3. The combination with a hinged propeller frame having a bearing sleeve, of a foldable arm pivoted on said frame and means on the sleeve for holding said arm in normal position, a transmission shaft journaled in the sleeve and carrying a pinion, a driving shaft journaled in the head and relatively movable thereto, and a driving gear movable with said shaft and normally engaging said pinion.

4. In an attachment as described the combination with a bearing head of a relatively movable, hollow, slotted shaft journaled therein and a crank arm for turning said shaft, of a driving wheel and its hub on the shaft and a locking pin securing said hub and shaft, a pin securing said crank arm

with the slotted shaft, and a spring within the hollow shaft suspended between said two pins.

5. The combination with a rigid bracket, of a propeller frame hinged therein and a propeller shaft and propeller journaled in the frame, a vertical transmission shaft journaled in the pivoted frame and operatively connected with the propeller shaft, a horizontal transmission shaft journaled in the frame and operatively connected with the vertical shaft, a foldable arm hinged to the frame and a bearing head thereon, a driving member supported in said head and a complementary driving member therefor carried by the horizontal transmission shaft.

In testimony whereof I affix my signature.

GRANVILLE M. BOYD.